MERCURY

Men’s Active Commuter Pack

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Sports Product Design M.S.
Capstone Project

Introduction

A self exploration exercise revealed an innovative spirit with a drive to design for the future. But much of current innovation happens in materials, at the chemical level, or in the tech industry. As someone interested in working in the equipment space, specifically in bags, how do I innovate without knowledge of those areas?

When I imagine the future, I imagine the people living, working, and moving in that future. Living in Portland, a city seeing explosive growth, it's impossible not to imagine the future of urban living.

The future I see revolves around solving problems we deal with today; unhappiness, stress, movement, transport, a disconnection with our planet and our fellow human.

Maybe I can't make the world's next app or the newest life saving materials, but can I solve some of these problems in a bag?

With this question in mind I set upon a path of research that led to the understanding of a movement within the athletic community. A movement that, through simplicity and pragmatism, has the potential to combat climate change, create more work satisfaction,

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Can I solve the world's problems with a bag?

---

and increase overall happiness and health.

In designing a product for this market, I drew on the aesthetic influences of Art Deco, a movement that changed the face of art, architecture and product, driven by an eye for the future and a desire for progress.

An Eye on the Future

In the next 25 years, the world's population will grow from its current 7.8 billion to roughly 8.5 billion (UN, 2015). Nearly all of this population growth will occur in cities (UN, 2015, Pg 51) as they flock to centers of commerce for work. This growth will put massive strains on cities' infrastructure. In the U.S. there is a backlog of $100billion in infrastructure need. In many cities, we can already see the impacts of this growth, especially in the rise in traffic. Cities like Portland moving towards urban density policies to avoid the infrastructure difficulties resulting from sprawling urban growth.

Traffic has a quantitative impact on mental health and job satisfaction. A study by the University of the West of England showed that a 20 minute increase in commute time, especially by bus, was equivalent to a 19% pay cut in relation to job satisfaction. On the contrary, walking or biking to work showed an increase in job satisfaction, along with a better perception of overall health.

The 2016 US Census showed that commuting remained fairly persistent over the previous decade, with the greatest up-tick in telecommuting. However, in major cities, human powered commuting continues to grow. Nationally, commute by cycling is listed at .6% while walk commuters make up 2.6% of workers. Also, alternatives to commuting by driving increased in all but 3 of the 50 largest cities in the US.

While there has been an increase in remote working, and such work has been said to have a positive impact on job satisfaction, many of these jobs require computer use, enforcing an increasingly sedentary lifestyle.

The Active, Urban Commuter

25-50 YEARS OF AGE
URBAN DWELLER
0-5 MILE MILE HUMAN-POWERED COMMUTE, 3 OR MORE TIMES PER WEEK

The Run2Work Movement

In the face of increased traffic, some have moved to an alternative mode of commuter transport; running. Faced with traffic laden commute times, a desire to maintain fitness, and the desire to dedicate free time to family and errands, rather than the gym, these athletes have found that they can solve all of these problems with one solution. Though sparse, data on the trend is being collected by Strava users around the world. According to the social media app, run commuters grew by 43% in 2017. In the US that amounted to an average of 31,169 commutes per week and based on those numbers, therruncommuter.com estimates that 5,194 Strava users run commute in the US every week.

To gather an estimate of market potential, a comparison can be made to the bike commuter population. SBRNET measures the overall US cycling market as 36.2 million, while frequent participants measure 4.9 million. The current US labor force is roughly 160 million people of which about 1 million commute by bike according to the US census; 2.7% of the overall cycling market and 20% of frequent participants. Applying these percentages to a running market of 44.9 million and a frequent participants market of 11 million results in an estimated market of 1.2-2.2 million potential run commuters in the US alone.

In addition, the US Census calculates a walking commuter population of 2.6% or 4.2 million in which run commuters would be included.

Make a Run for It

As commute numbers rise in general, run-commuting sees a large increase as well.

Run commutes grew this year by **51%**

Run commuters grew this year by **43%**

Here are the top 10 cities with the most run commuters:

London
Amsterdam
Paris
NYC
Sydney
San Francisco
Los Angeles
São Paulo
Barcelona
Melbourne

POTENTIAL US MARKET
RUN COMMUTERS
1.2-2.2 MILLION
WALK/RUN COMMUTERS
4.4 MIL.

Retail Research

I AM RUNBOX
Backpack Pro

Run Commuter Focused
Volume: 10 L
Weight: 33.3 oz
Price: $184
Modular
Specialized Packability
Protective Casing
EVA Foam Interior
Nylon Exterior w/ DWR Finish

NIKE
Commuter

Runner Focused
Volume 15 L
Weight: 13.8 oz
Price: $70
Polyester 95%/Nylon5%
Water Bottle Stash Pockets
Versatile Packability
Breathable Power Mesh
Reflective Detailing
Hydration Pack Pocket

LULULEMON
Surge Run Backpack

Versatile Packability
Sleek Urban Design
Run Commuter Focused
Volume 15 L
Weight: 12 oz
Price: $128
Rip-stop Nylon
DWR Finish
Reflective Detailing
Padded Laptop Pocket

OMM
Ultra 15

Ultra Runner Focused
Volume 15 L
Weight: 12 oz
Price: $65
Polyester w/ PU coating
Water resistant
Hip Belt
External Pockets
Reflective detailing

OSPREY
Hikelite 18

Day Hiker Focused
Volume 18 L
Weight: 24 oz
Price: $85
Rip-stop Nylon
Ventilated mesh panel
Hydration Sleeve
Rain cover

DEUTER
Speedlite 20

Day Hiker Focused
Volume 20 L
Weight: 13 oz
Price: $75
Nylon w/ PU coating
Breathable Foam Back
External Pockets
Removable hip belt
Stretch Compartment for sweaty clothes










Product Analysis

Other Innovative Materials

Cordura Nylon: Very durable but heavy.

Dyneema: Durable and light but costly and limited in aesthetic.

Product SWOT Analysis

STRENGTHS	WEAKNESSES
Highly Technical Multitude of Features Quality of materials	Over-designed Inflexible Design
OPPORTUNITIES	**THREATS**
Versatility Focused User Other Commuters (Walkers,Cyclists) Crossing Disciplines Refined Aesthetics	Over-saturated Market High Cost Market Buy-in

Athlete/Sport Research

MINDSET

Online research and phone interviews gleaned a great deal about run commuters, their needs, their mindsets, and the barriers to run commuting. Run commuters are almost exclusively runners first. Often they incorporate their commute into pre-existing training regimen. They tend to be pragmatic and interested in optimizing their time. As one of my interviewees stated, run commuting offers the opportunity to "kill multiple birds with one stone."

An added benefit is amount of money saved by run commuting. Some run commuters find that they no longer need 2 cars for their family, and enjoy the savings that come along.

They also enjoy the fact that they are being environmentally friendly. Beyond pragmatism is an enjoyment of the outdoors and a concern for the well-being of the planet.

Interviewees also discussed the temporal transition between work and home. The creation of space and time away from devices and the madness of the everyday left them with a stronger feeling of mental and physical health. Run commuters enjoy the physical challenges of their activity and the creative problem solving involved in working out the logistics of their commutes and finding products to help them with those logistics.

PROBLEMS

Weight is surprisingly not often considered a problem for run commuters. To them, it adds a level of physical challenge that can benefit their training. Distribution of weight, however, can cause bounciness or unruliness. Therefore, stability, fit, containment, and lock-down are critical.

Volume, however, frequently comes up as an issue. The inability of many packs to hold the clothes, shoes, notebooks, and other items that run commuters often need requires them to create complicated logistical arrangements.

Sweat mitigation is a frequent issue during temperature extremes. Breath-ability, especially on the back, is desired in hot climates, while in freezing temperatures sweat can be trapped and turn into ice.

Interviews suggest that a higher centralized pack, close to the body, ending above the small of the back, could be a better design for both stability and sweat mitigation. Multiple sources point to waist straps being negative points, frequently removed by users, while sternum straps or straps below the chest seem to be more effective. Also, excess straps are a major annoyance.

Some packs utilized PU coated nylon to remain water resistance but a built-in or removable rain shield seems to be a valued accessory.

Access to certain items such as wallets, keys, access cards, and phones, is another feature valued by run commuters. Those I spoke to mentioned needing access to their lighting equipment, such as flashlights, headlamps, and blinkers for night time visibility.

Pack of Choice:
Deuter Speedlite 20

Spencer

"I don't really see the weight as a problem because it's like a baseball player swinging with 2 bats. I'm only that much stronger."

34 year old Optometrist in Portland, OR.
22 minutes 1.24 mile Commute
Walks to work and Run commutes home regardless of weather
Incorporates commute into training regimen.

Generic Mountain Hardware backpack

Nathan

"I was getting my run in, commuting to work and listening to a book all at the same time."

39 year old Consulting Firm Employee
Co- Owner of Oregon Brewery Running series
Formerly run commuted in Minnesota.
Run commuted to work for 4-5 years 3-4 days a week, commuting home by bus.
All weather- 10° below zero, knee high snow, to 100°F
Commute was 7 -15 miles depending on training.
Started commuting because one car died. Could run to work in about an hour.
Saved 30-45min in a day by run commuting.

Pack of Choice
Gregory Mountain Equipment 20L

Grant

"When you do the cost-benefit analysis of sitting in a car in southern California vs running with, like, a piano on your back, I'd still rather do that."

40 year old College Dean in Los Angeles, California.
Run commutes 3-4 days a week, 4.5 mi each way,
Will modify commute to incorporate them into workouts.
Trail races and Ultra marathons and marathons

Market

According to the 2016 U.S. Census, 2.7% of the working population commutes by walking. That's a market of approximately 4 million people. alternatives to commuting by driving increased in all but 3 of the 50 largest cities in the U.S.

Prototyping & Plan

PHASE 1
INITIAL PROTOTYPES

CARD STOCK PROTOTYPES:
For checking body fit.

STRAPPING/MATERIAL CONSTRUCTION:
Sew various materials together.

POCKETS/ZIPPERS/ FASTENERS:
Prototype pocket designs. Experiment with different closure systems.

BINDING:
Experiment with different binding methods

INTERIOR:
Prototype different internal packing methods and liners.

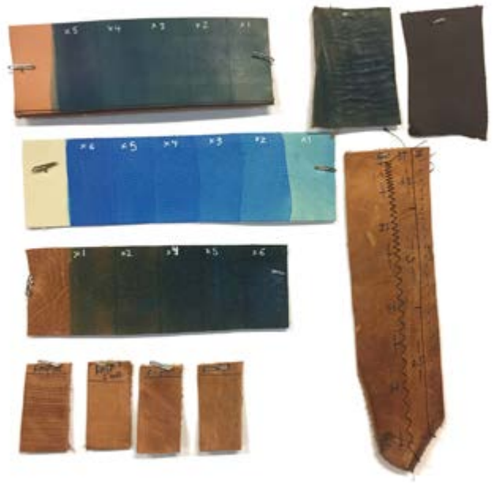
PHASE 2
ROUGH PROTOTYPE

Create working prototype for initial testing.

PHASE 3
FINAL PROTOTYPE

Create full protoype.
Test on athletes.

Initial Prototypes



ABRASION, STITCH & COLOR TESTS

CUSHIONING

LASER CUTTING TESTS

MATERIAL CONSTRUCTION

Testing Plan

PHASE 1
TESTING PROTOTYPED ELEMENTS

DURABILITY OF FEATURES:
Test any prototyped hardware, zippers, fasteners or manipulatable elements for durability.

SEAM & STRAP DURABILITY:
Attach dumbbells to straps to test overall strength and the seam at the edge of attachment to bag.

MATERIAL DURABILITY:
Test material rip strength. with available methods.

EASE OF USE TEST:
Use paper mock-ups to test harness designs.

FIELD TESTING:
Test simple harness prototypes based on paper mock-ups during runs and bikes to inform initial prototype design,

PHASE 2
TESTING INITIAL PROTOTYPE

PACKING TEST:
Test to see if system can carry all necessary items described in detailed brief.

ABRASION & FIT:
Paint surface of prototype and test on self during runs to address hot spots and points of movement.

EASE OF USE TEST:
Evaluate ease of donning and doffing and accessing certain areas during athletic efforts.

WEATHER TEST:
Test material and seam construction for water resistance.

PHASE 3
TESTING FINAL PROTOTYPE(S)
(size L)

WEIGHT & VOLUME TEST:
Test weight using digital hanging scale
Test volume by filling pockets with ping pong balls.

USER TESTING:
Using 3-5 male testers test over a run consisting of 1, 2, and 3 mile evaluations. Evaluate fit, comfort, and stability. Take notes.

EASE OF USE TEST:
Using 3-5 male testers evaluate ease of donning and doffing and accessibility during runs. Take notes.

Active Urban Professional

The needs of the Active Urban Professional exists at the nexus of these two users.

Urban Professional's Needs

Professional Aesthetic

Storage For Daily Items

Versatility Depending on Setting

Run Commuter's Needs

Stability of Movement

Fit for Comfort

Thermoregulation

Active Urban Professional

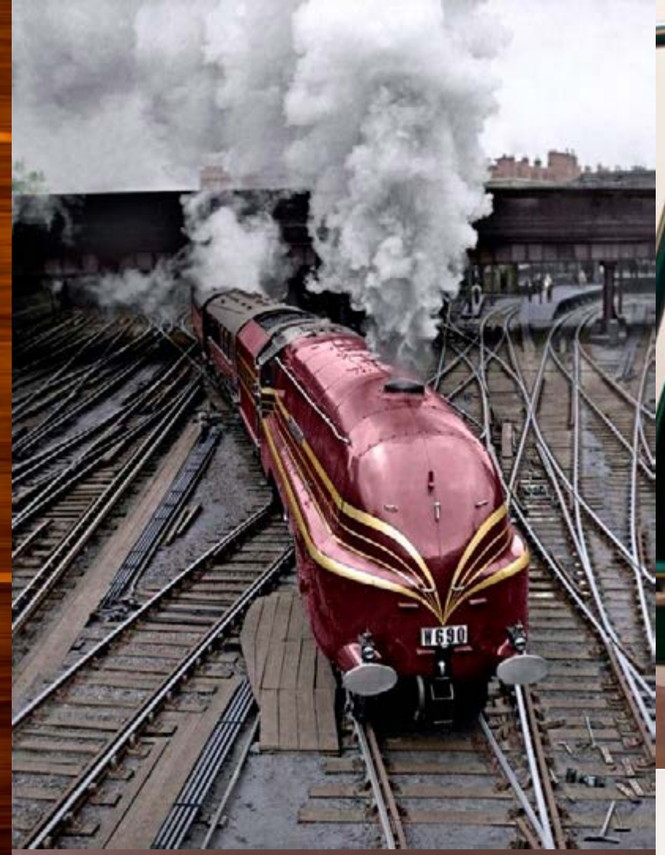
Late 20’s-Mid 30’s
Commutes Primarily by Walking
1-5 miles a day
Travels Lightly
Earns over 70k a year

Needs

Professional Aesthetic
Versatility Depending on Setting
Stability of Movement
Fit for Comfort
Thermoregulation
Storage For Daily Items

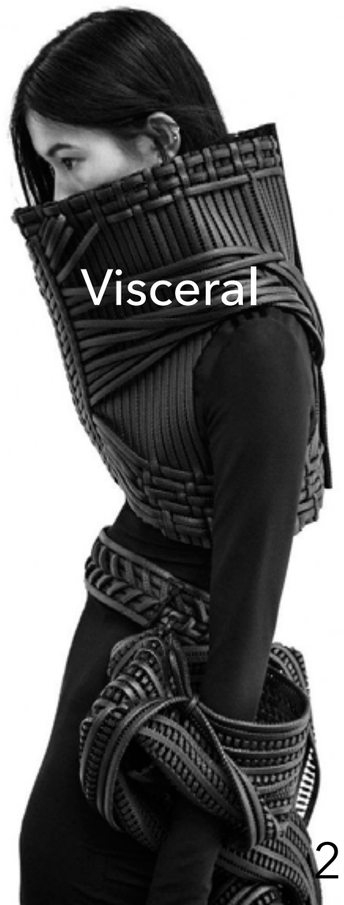
Inspiration

Modern

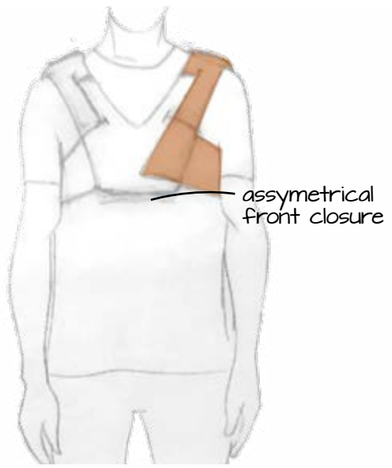


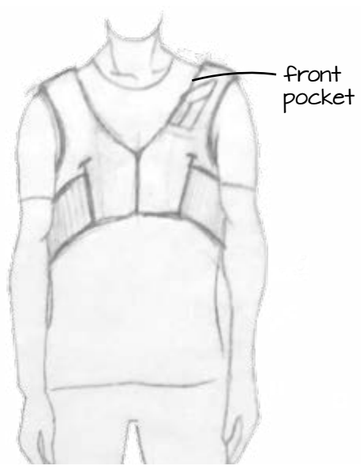
Timeless

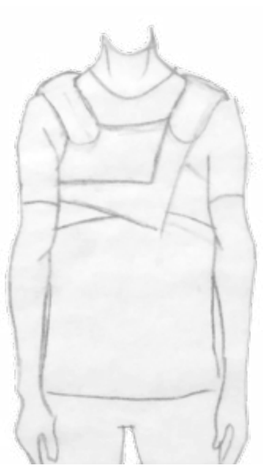
Elegant

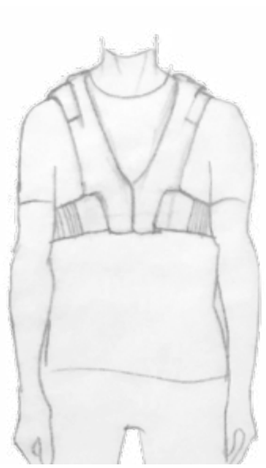


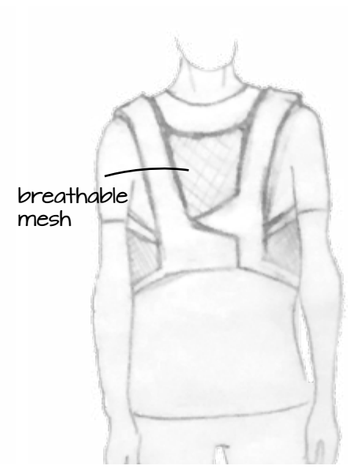
Visceral

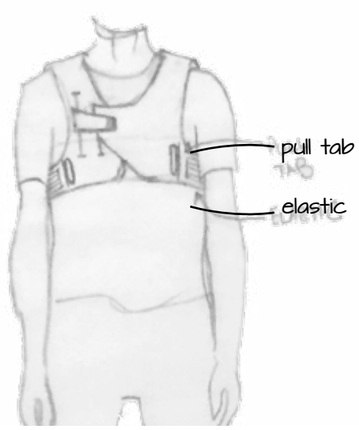

assymetrical
front closure

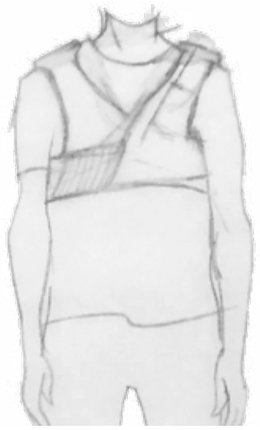

front
pocket

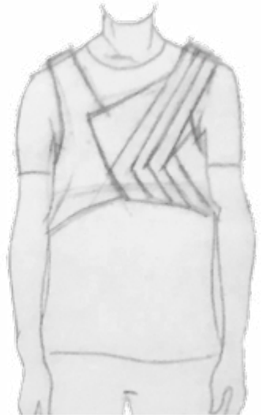


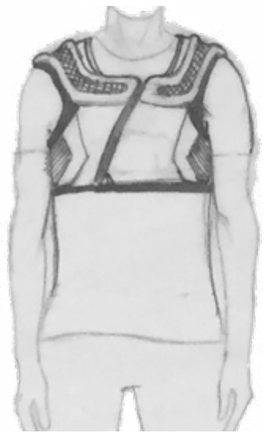


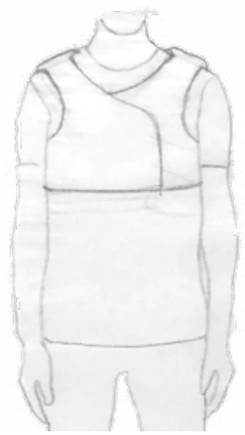

breathable
mesh

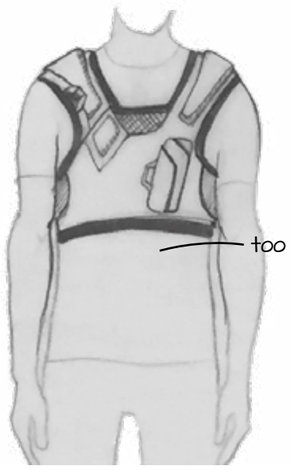

pull tab
elastic

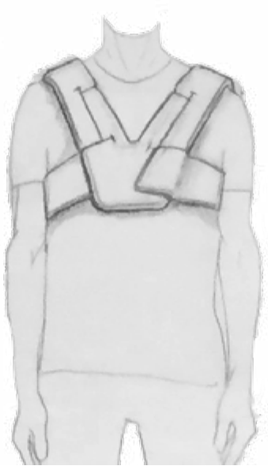


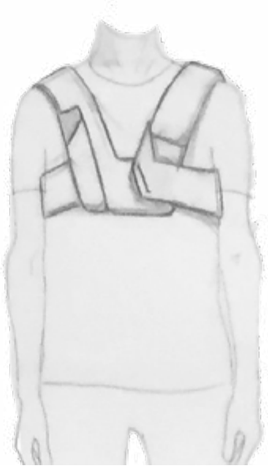


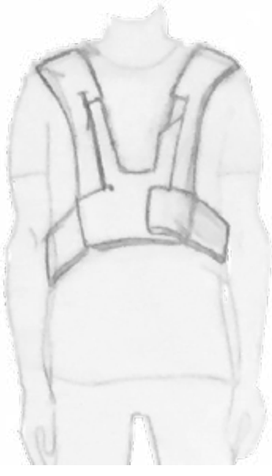


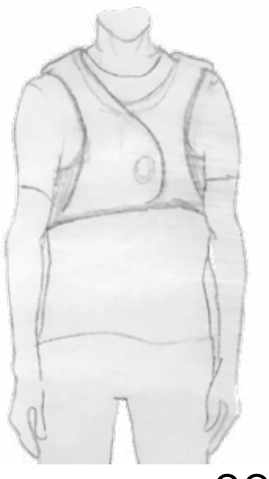


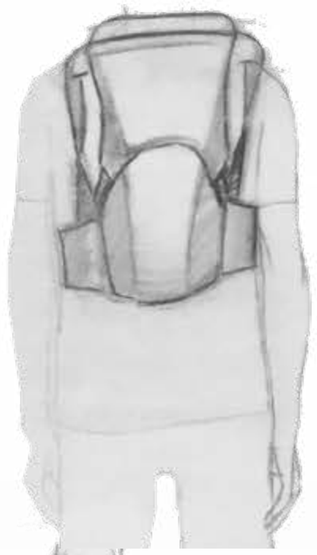

too utilitarian

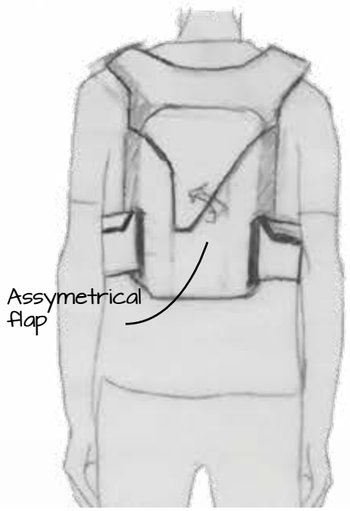

getting there

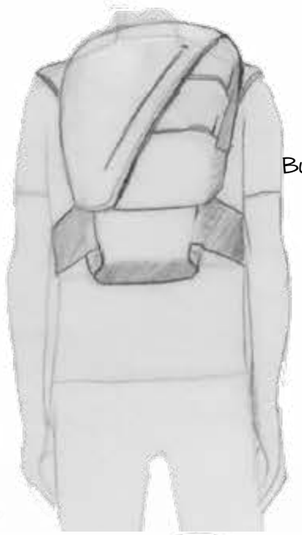




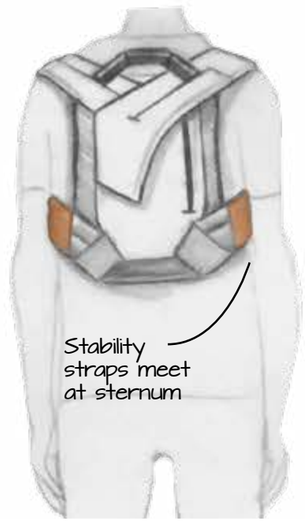


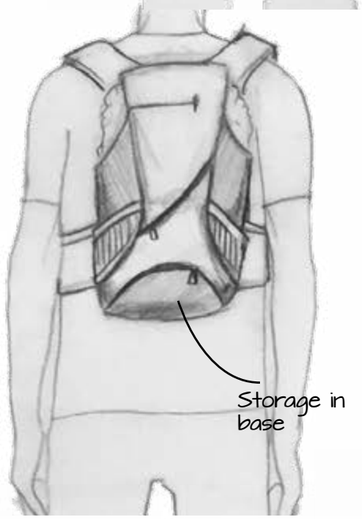


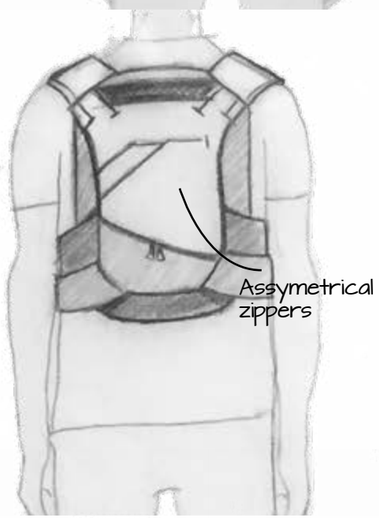

Assymetrical
flap

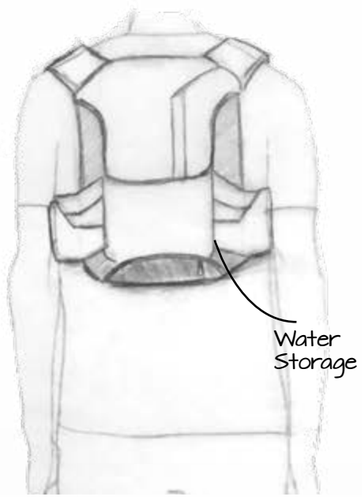



Built-in handle


Stability
straps meet
at sternum

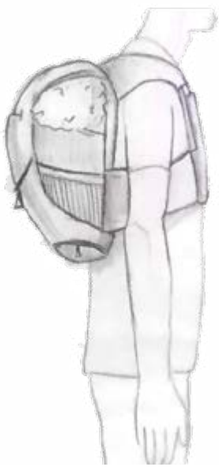

Storage in
base


Assymetrical
zippers


Water
Storage

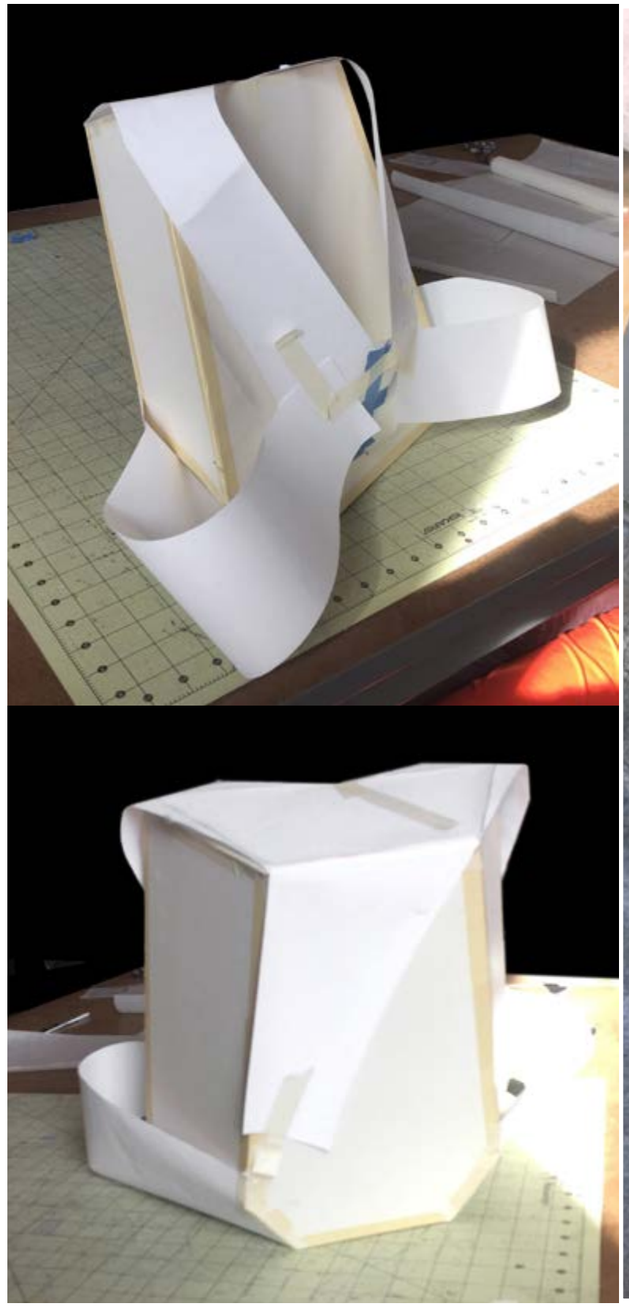

Shoe pockets

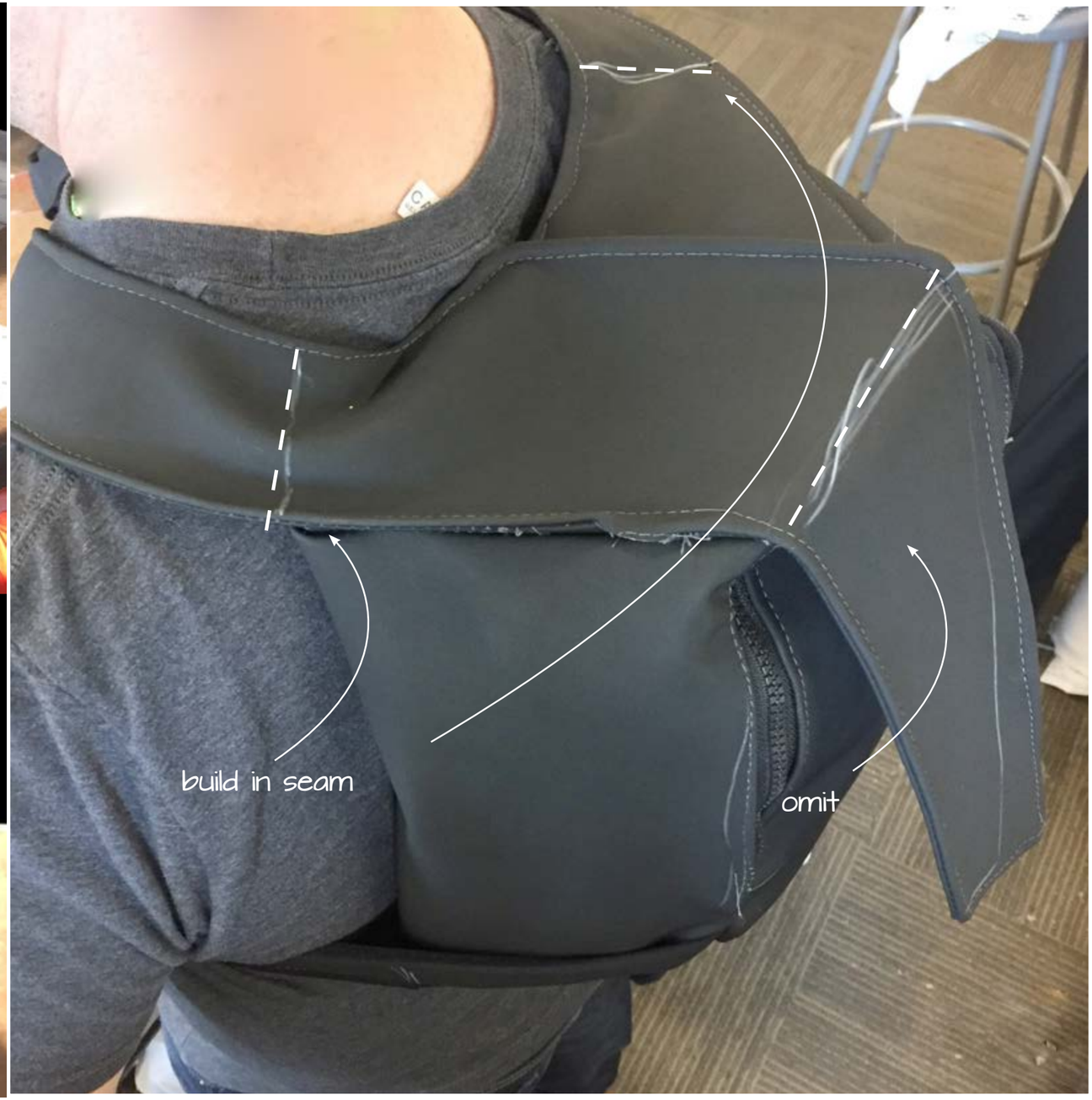

Sits above
small of back



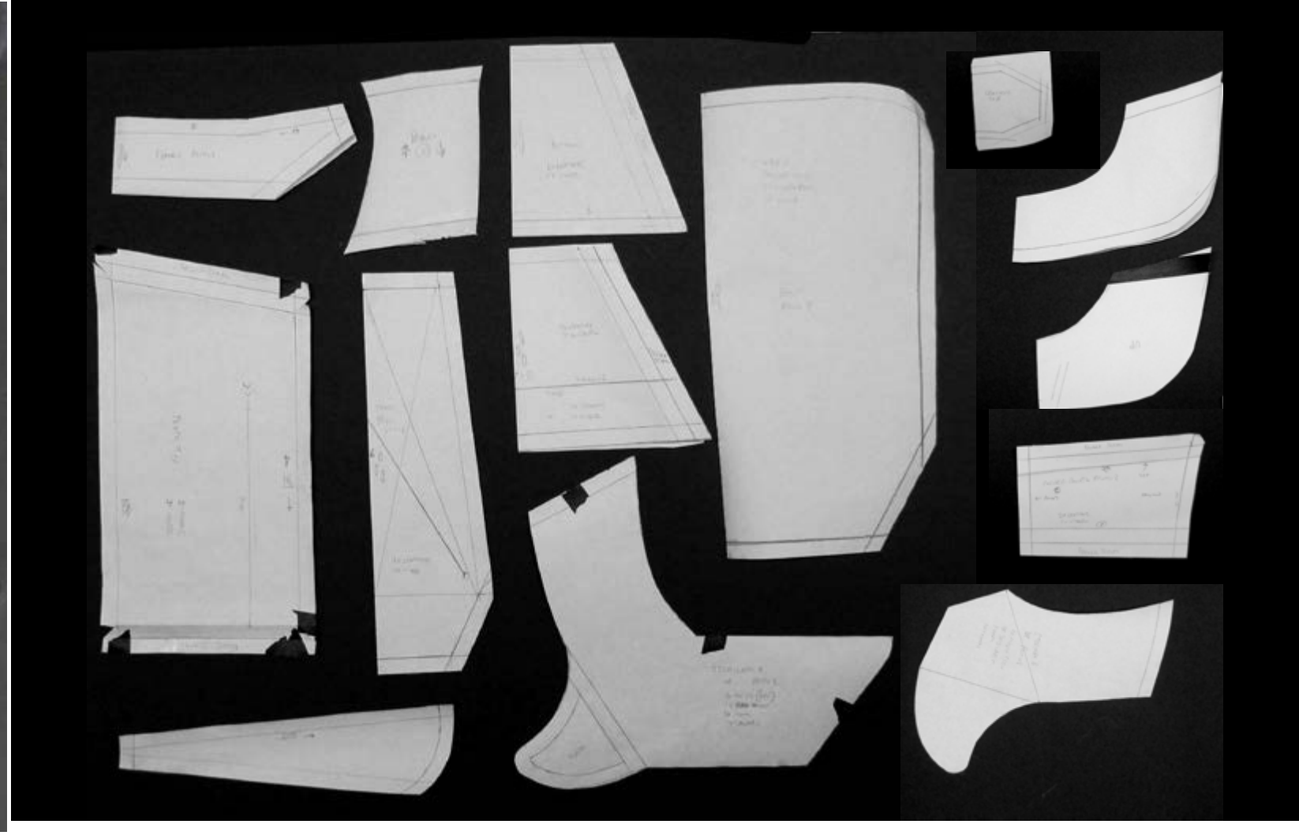
Process

Sketching could only take me so far. Prototyping paper models helped to inform early form studies and pattern making. Iterative prototypes and fit testing led to further construction and pattern changes.





Fit testing produced a flange which was integrated to add support.



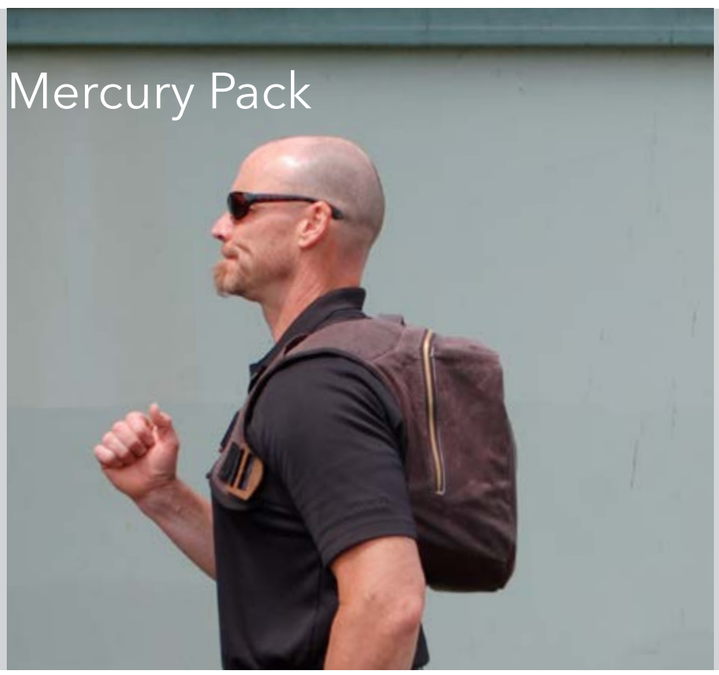
Finalizing sternum strap fit and strap placement.

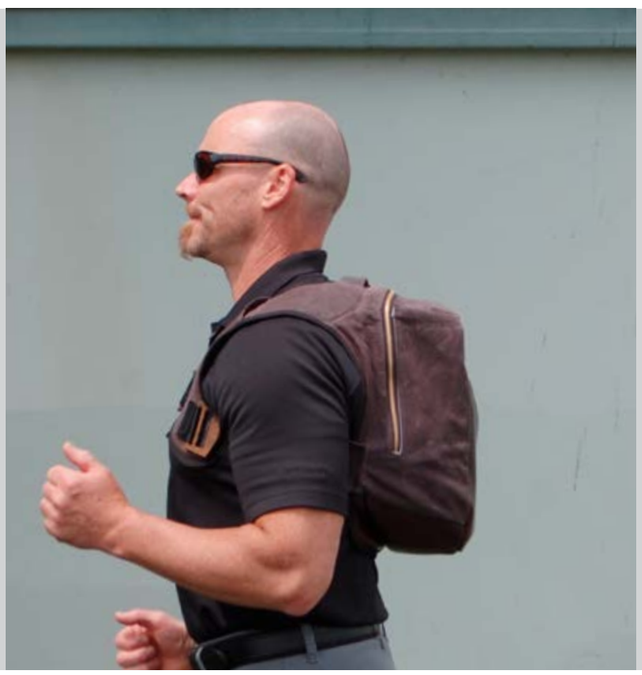
Validation

Traditional Backpack

Pack lifts away from the body moving up and down during vertical movement.

Mercury Pack

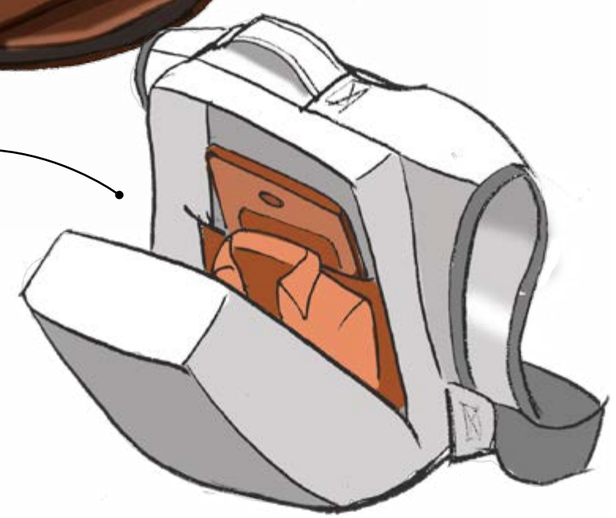




Pack stays close to the body with little to no movement.

MERCURY

Men's Active Commuter Pack



Internal storage for shoes, clothes, & misc. itemswith sleeve for tablet,

Color & Materials

Textiles

Polyester

Spacer Mesh

CowHide

Waxed Canvas

Trim

Walnut

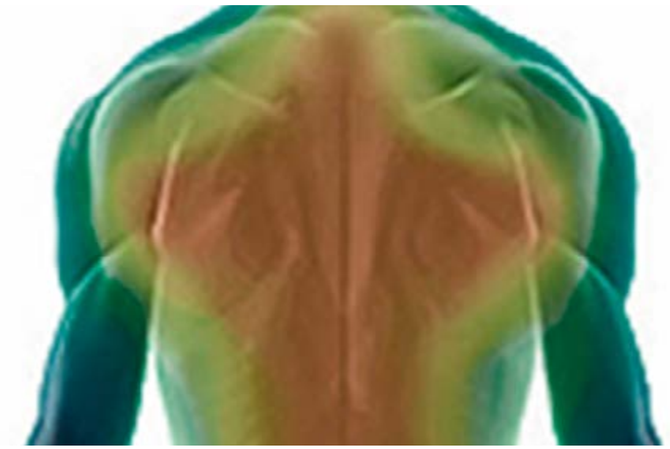
Brass

MERCURY

Men’s Active Commuter Pack

A modern, finely crafted alternative to existing commuter bags, designed for movement, mobility, and versatility needed by the active urban professional. Hand-made using timeless, quality, durable materials that age beautifully with use.

Custom wooden hardware made from cross-grained walnut veneer challenges the current conception of backpack hardware.



Back panel provides cushioning and thermoregulation, fusing advanced technologies with modern, visceral aesthetics.

Front clasping chest panel
provides exceptional stability.

Convenient front pockets provide accessibility while on the go.


Pack fits snug, just above the small of the back, to avoid chafing and provide comfort and excellent ergonomic fit.

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